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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/518,052 | 12/16/2004 | Masayoshi Tatemoto | Q8-4889 | 3499 |
| 23373 7590 11/17/2008 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037 | | | EXAMINER KOLLAS, ALEXANDER C | |
| | | | ART UNIT 1796 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/518,052

Applicant(s)

TATEMOTO ET AL.

Examiner

ALEXANDER C. KOLLIAS

Art Unit

1796

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-10, 37, 38 and 51-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-10, 37, 38 and 51-59 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. All outstanding objections and rejections, except for those maintained below, are withdrawn in light of applicant's amendment filed on 8/16/2008.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 8-10, 38, and 56 are rejected under 35 U.S.C. 102(b) as being anticipated by Grot (US 4,433,082).

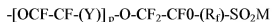
Regarding claim 8, Grot discloses a fluoropolymer dispersion comprising fluoropolymers dispersed in an aqueous medium Column 5, Lines 20-25 and Column 6, lines 18-42). The fluoropolymer particles have an acid/salt group of the form $-\text{SO}_3\text{M}$, where M is H, Na, K, or NR_4 where R is hydrogen or an alkyl group such as CH_3 or C_2H_5 (Column 5, Lines 20-24). Although the reference does not explicitly disclose that the polymer particles are spherical and comprise at least 25 wt % of the solution, However, it is the examiner's position that the properties in question are a direct function of, or are correlated to, the identity of the composition or the monomers that are used to make the composition, absent evidence to the contrary. It is for this

reason that it is sound and proper to maintain that the properties in the present claims are intrinsically present in the applied references.

Regarding claim 9, Grot teaches all the claim limitations as set forth above. Additionally, the reference discloses that the fluoropolymer dispersion comprises 2 to 18 wt % of the dispersion (Column 7, Lines 8-11). It is noted that the amount of fluoropolymer disclosed by the reference is within the disclosed range of 2 to 80 % recited in the present claim.

Regarding claims 10 and 38, Grot teaches all the claim limitations as set forth above. Additionally, the reference discloses that the aqueous dispersion comprises a mixture of a liquid medium in the amount from 82 to 98 wt % (Column 7, Lines 8-11). The reference discloses that water comprises 30 wt % to 70 wt % water and 15 to 35 wt % propanol and 15 to 35 wt % methanol (Column 6, Lines 39-42). It is noted that the amount of water disclosed is within the claimed range of 10 wt to 100 wt % of the liquid medium as presently recited in the **claim 10**. The mixture of water with alcohols such as methanol and propanol meet the claim limitations recited in **claim 38**.

Regarding claim 56, Grot teaches all the claim limitations as set forth above. Additionally, the reference discloses that the polymer comprises the following side-chains:



where Y and R_f are fluorine and p is 0, 1, or 2 (Column 4, Lines 10-39). It is noted that the side-chain disclosed by the reference are identical to recited side-chain (II) recited in the present

claim. Furthermore, from the formula presented in the reference is it clear that the side-chains are attached to the polymeric backbone via an either bond.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 8, and 51-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bekiarian et al (US 2004/0167289) and Doyle et al (US 6,140,436) and as evidenced by Odian (*Principles of Polymerization*, see attached pages).

Regarding claims 8 and 51-56, Bekiarian discloses a fluoropolymer comprising a non-ionic monomer comprising pending side chains which comprising the group $-\text{SO}_3\text{NH}_4$ (Page 2 [0030]-[0032]) which are obtained via alcohol hydrolysis (Page 2, [0033]). It is noted that the fluoropolymer side-chains disclosed by the reference are identical to the side-chains presently recited in **claim 56**. Additionally, the reference discloses a method wherein the polymer is obtained by emulsion polymerization (Page 3, [0047] Page 4, [0048]) to obtain a liquid dispersion of the fluoropolymer. Furthermore, the reference discloses a process of emulsion polymerizing vinylidene fluoride (VDF) are copolymerized with a non-ionic monomer and a pendent group to produce a liquid dispersion (Page 2, [0030]-[0031], Page 3, [0046]-[0047], and Page 4 [0048]). It is well known in the art that emulsion polymerization yields spherical particles as evidenced by Odian (see Page 341 of reference) and as such the claim limitations recited in **claims 8 and 51** are met. Furthermore, as evidenced by Odian, emulsion polymerization produces particle sizes of 50 to 200 nm (see Page 341). The particle size range evidenced in Odian is within the particle size range recited in **claims 52-54**.

Regarding the claim limitation recited in claim 55, that the fluoropolymer dispersion has more acid/salt groups on the particle surface than in the inside of the particle, it is the examiner's position that the properties in question are a direct function of, or are correlated to, the identity of the composition or the monomers that are used to make the composition, absent evidence to the

contrary. It is for this reason that it is sound and proper to maintain that the properties in the present claims are intrinsically present in the applied reference

Bekiarian discloses all the claim limitations as set forth above. However, the reference does not explicitly disclose that the acid/salt group containing polymer is dispersed in a medium to form a liquid dispersion.

Doyle et al discloses a polymer comprising VDF and a perfluoroalkenyl monomer having pendent groups (Column 3, Lines 35-53). The reference discloses that both the pendent side-chains and olefin comprising the fluorinated sulfonyl group are hydrolyzed to SO_3M where M is a univalent metal by identical processes (Column 3, Lines 54-56). The reference discloses that the preparation of the copolymerization of VDF and the fluorinated side chains can either be copolymerized together first and then hydrolyzed, or hydrolyzed first and then copolymerized (Column 4, Lines 1-8). The hydrolysis process disclosed by the reference is contacting the sulfonyl fluoride containing monomer or polymer with a mixture of alkali metal carbonate and methanol (Column 4, Lines 9-19 and Column 5, Lines 9-19). Additionally, the reference discloses that the sulfonyl fluoride copolymer resin can be hydrolyzed by suspension in a hydrolyzing medium (Column 4, Lines 64-66).

Given that both Bekiarian et al and Doyle are drawn to fluoropolymers comprising sulfonyl groups and hydrolysis of these copolymers via alkali hydrolysis, it would have been obvious to one of ordinary skill in the art to include the method steps disclosed by Doyle et al in formation of the fluoropolymer disclosed by Berkiarian et al with a reasonable expectation of success.

9. Claims 9-10 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bekiarian et al (US 2004/0167289) and Doyle et al (US 6,140,436) as evidenced by Odian (*Principles of Polymerization*, see attached pages) as applied to claims 8, and 51-56 above and further in view of Grot (US 4,433,082).

Regarding claims 9-10 and 38, modified Bekiarian teaches all the claim limitations as set forth above. However, Bekiarian et al does not disclose that the liquid dispersion comprising 2 to 80 wt % fluoropolymer and that water comprises 10 to 100 wt % of the liquid medium.

Grot discloses that the fluoropolymer dispersion comprises 2 to 18 wt % of the dispersion (Column 7, Lines 8-11). It is noted that the amount of fluoropolymer disclosed by the reference is within the disclosed range of 2 to 80 % **recited claim 9**. The reference discloses an aqueous dispersion comprises a mixture of a liquid medium in the amount from 82 to 98 wt % (Column 7, Lines 8-11). The reference discloses that water comprises 30 wt % to 70 wt % water and 15 to 35 wt % propanol and 15 to 35 wt % methanol (Column 6, Lines 39-42). It is noted that the amount of water disclosed is within the claimed range of 10 wt to 100 wt % of the liquid medium as presented recited in the **claim 10**. The mixture of water with alcohols such as methanol and propanol meet the claim limitations recited in **claim 38**.

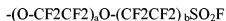
10. Claims 37, and 57- 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bekiarian et al (US 2004/0167289) in view of Doyle et al (US 6,140,436).

Regarding claims 38, and 57-59, Bekiarian et la discloses a process wherein VDF is copolymerized with a non-ionic monomer $\text{CF}_2=\text{CF}-(\text{O}-\text{CF}_2\text{CF}_2)_a\text{O}-\text{CF}_2(\text{CF}_2)_b\text{SO}_2\text{F}$ and pendent groups of the following form: $-(\text{O}-\text{CF}_2\text{CF}_2)_a\text{O}-(\text{CF}_2\text{CF}_2)_b\text{SO}_2\text{F}$ wherein $-\text{SO}_2\text{F}$ is hydrolyzed

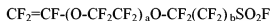
with ammonium carbonate to form a pendent group of the form: $\text{O}-(\text{CF}_2\text{CF}_2)_a\text{O}-(\text{CF}_2\text{CF}_2)_b\text{SO}_3-\text{NH}_4$ (Page 2, [0030]-[0032], Page 3, [0046]-[0047] and Page 4, [0048]-[0049]). It is noted that the ionic monomer and side-chain disclosed by the reference are identical to Formulas (I) and (II) recited in **claims 57-58**. The reference discloses a process wherein the fluoropolymer, including precursor and fluoro-monomer are copolymerized to form an aqueous dispersion of fluoropolymer particles (Page 3m [0046]-[0047] and Page 4 [0047]-[0048]).

The reference teaches all the claim limitations as set forth above. However, the reference does not disclose that the fluoropolymer dispersion is produced without drying the fluoropolymer precursor and fluoropolymer

Doyle et al discloses a polymer comprising VDF and a perfluoroalkenyl monomer having pendent groups of the form (Column 3, Lines 35-53):



It is noted that the side chain disclosed by the reference is identical to the side chain recited in **claim 57**, wherein the sulfonic acid group is bound to the side chain of recited formula (I). additionally, the reference discloses olefins of the following form (Column 3, Lines 54-67):



It is noted that the olefin disclosed by the reference is identical to the precursor given by Formula (II) recited presently in **claim 58**. The reference discloses that both the pendent side-chains and olefin comprising the fluorinated sulfonyl group are hydrolyzed to SO_3M where M is a univalent metal by identical processes (Column 3, Lines 54-56). The reference discloses that the preparation of the copolymerization of VDF and the fluorinated side chains can either be copolymerized together first and then hydrolyzed, or hydrolyzed first and then copolymerized

(Column 4, Lines 1-8). The hydrolysis process disclosed by the reference is contacting the sulfonyl fluoride containing monomer or polymer with a mixture of alkali metal carbonate and methanol (Column 4, Lines 9-19 and Column 5, Lines 9-19). Additionally, the reference discloses that the sulfonyl fluoride copolymer resin can be hydrolyzed by suspension in a hydrolyzing medium (Column 4, Lines 64-66).

Given that both Bekiarian et al and Doyle are drawn to fluoropolymers comprising sulfonyl groups and hydrolysis of these copolymers via alkali hydrolysis, it would have been obvious to one of ordinary skill in the art to include the method steps disclosed by Doyle et al in formation of the fluoropolymer disclosed by Berkiarian et al with a reasonable expectation of success.

Response to Arguments

11. Applicant's arguments, see Remarks, filed 8/16/2008, with respect to the rejection(s) of claim(s) 8-10 and 37-38 under 35 U.S.C. 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Grot as set forth above in Paragraph 4 above, Bekiarian et al and Doyle et al and as evidenced by Odian as set forth in Paragraph 8 above and Bekiarian et al in view of Doyle et al as set forth in Paragraph 10 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER C. KOLLIAS whose telephone number is

(571)270-3869. The examiner can normally be reached on Monday-Friday, 8:00 AM -5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571)-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. C. K./
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796